Paper No. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte NIGEL JOHN FORROW
and SIMON WILLIAM BAYLIFF

_____

Appeal No. 2004-0381
Application No. 09/924,267

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ON BRIEF

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Before OWENS, DELMENDO and PAWLIKOWSKI, **Administrative Patent Judges**.

PAWLIKOWSKI, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 10, 11, 13, 14, 15, 16, 18-22, and 25.

Claim 10 is representative of the subject matter on appeal and is set forth below:

> 10. A sensor for measuring glucose in a sample of blood, said sensor comprising an electrode arrangement, which comprises an electrode support having at least one printed track of electroconductive carbon ink, said at least one printed track defining the position of at least one electrode, said at least

one electrode comprising a thin working layer, said thin working layer having a thickness of 2 to 10 microns, said thin working layer comprising a printed ink, said ink comprising an enzyme and a redox mediator, said electrode, in the presence of a sample of blood, having a response slope that remains substantially constant as the thickness of said thin working layer decreases.

The examiner relies upon the following references as evidence of unpatentability:

Omoto et al. (Omoto)	5,183,742	Feb. 02, 1993
Maley et al. (Maley)	5,494,562	Feb. 27, 1996
Carter et al. (Carter)	5,628,890	May 13, 1997
McAleer et al. (McAleer)	5,708,247	Jan. 28, 1998
Karube et al. (Karube)	5,804,047	Sep. 08, 1998

Arai et al. (Arai), "Production process of glucose sensor by printing method," Chem. Sens. (1996), 12 (Suppl. A), 137-140.

Kawaguri et al. (Kawaguri)* (Japanese Patent Publication)	JP 03202764	Sep. 04, 1991
Kawaguri et al. (Kawaguri) (Abstract, Japanese Patent Publication)	JP 03202764	Sep. 04, 1991

*An English translation is provided herewith, translated by FLS, Inc.

Claims 10, 11, 13-16, 18-22, and 25 stand rejected under 35 U.S.C. § 112, second paragraph. On page 5 of the answer, the examiner lists 3 different sets of § 112, second paragraph, rejections in connection with claim 10. The examiner refers to Paper No. 21 for the details of these rejections. See particularly pages 4-5 of Paper No. 21. We treat all of these rejections as a single rejection of claims 10, 11, 13-16, 18-22, and 25 under 35 U.S.C. § 112, second paragraph.

Claims 10, 11, 14-16, 18, 24 and 25 stand rejected under

35 U.S.C. § 103 as being obvious over Arai in view of Kawaguri and McAleer.

Claim 13 stands rejected under 35 U.S.C. § 103 as being unpatentable over Arai in view of Kawaguri and McAleer and further in view Karube and Omoto.

Claims 19 and 20 stand rejected under 35 U.S.C. § 103 as being obvious over Arai in view of Kawaguri and McAleer and further in view of Maley.

Claims 21 and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over Arai in view of Kawaguri and McAleer and further in view of Carter.

On page 5 of the brief, appellants state that the claims stand or fall together. We therefore consider claim 10 in this appeal. See 37 CFR § 1.192(C)(7) and (8)(2002).

OPINION

I. The rejection under 35 U.S.C. § 112, second paragraph

The examiner's position regarding this rejection is set forth on pages 4-5 of Paper No. 21.

On page 10 of the answer, the examiner correctly points out that appellants do not address the 35 U.S.C. § 112, second paragraph, rejection of claims 10, 11, 13-16, 18-22, and 25.

In view of the fact that appellants did not argue this rejection, we are constrained to affirm this rejection of claims 10, 11, 13-16, 18-22, and 25 under 35 U.S.C. § 112, second paragraph.

II. The 35 U.S.C. § 103 rejections

On pages 6-8 of the Office action of Paper No. 21, the examiner sets forth his position regarding these § 103 rejections.

The examiner states that Arai sets forth a sensor for measuring an analyte in a sample, and that Arai teaches an electrode comprising a thin working layer. On page 7 of the answer, the examiner indicates that the electrode of Arai is made, in part, from printed carbon ink. Yet, on page 7 of Paper No. 21, the examiner states that Arai "does not mention using electroconductive carbon ink with a printed track; Arai uses copper ink".

Upon our review of Arai, we find the following.

Figure 2 of Arai indicates a copper lead and an electrode. The electrode is discussed in Section 2-2 of Arai. Here, Arai discloses that the substrate has a copper paste lead. Also, the electrode material is made of carbon black combined with glucose oxidase (GOD) and ferrocene, in an organic-solvent-based binder solution, to produce the ink. The ink is printed on the portions of the lead not coated with the resist to make an enzyme electrode. Screen printing is used for all printing.

Section 3-2 of Arai indicates that Figure 3 shows a cyclic voltammogram of an enzyme electrode wherein the enzyme electrode has a diameter of 5 mm and a thickness of 5 microns.

Section 3-3 of Arai indicates that Figure 4 shows the data obtained by measuring the relationship between glucose concentration and response current at various electrode thicknesses. The greater the electrode thickness (5, 8, and 10 microns), the greater the response current. At a thickness of 10 microns, marked increases in current were seen up to a concentration of glucose of 500 mg/dl. As electrode thickness

influences the characteristics, thickness should be one of items controlled in the printing process.

The particular disclosure found in Section 3-3 of Arai indicates that the electrode thickness can range from 5 microns up to 10 microns, and that within this variation, the current varies. The thickness of the copper lead is not specifically set forth in Arai. Hence, upon review of Figure 2, the total thickness of the copper lead plus the electrode is unknown. All that we know is that the electrode can have a thickness of from 5 microns to 10 microns.

The examiner relies upon Kawaguri and McAleer for teaching that carbon tracks are well-known in this art and therefore substituting the copper lead of Arai with a carbon track would have been obvious. On page 6 of the answer, the examiner indicates that copper tracks are less expensive, and copper is more likely to adversely react with the sample than carbon, and therefore it would have been obvious to make the substitution. On page 7 of Paper No. 21, the examiner also discusses this same reasoning.

Appellants argue that this combination does not satisfy the aspect of the claim regarding "said electrode, in the presence of a sample of blood, having a response slope that remains substantially constant as the thickness of said thin working layer decreases." (Brief, page 6.)

In response, on page 8 of the answer, the examiner argues that the modified sensor of Arai in view of Kawaguri and McAleer would achieve the same properties because it would have the same structure. We disagree with the examiner for the following reasons.

As mentioned above, it is not certain what the thickness is of the copper lead plus the electrode as set forth in Arai.

Arai only discloses possible thicknesses for the electrode. Arai does not disclose possible thicknesses for the copper lead. Substitution of the copper lead with the carbon tracks of the secondary references would result in an unknown total thickness.

Appellants' claim 10 requires that the thin working layer of the electrode has a thickness of from 2 to 10 microns, such that the electrode has a response slope that remains substantially constant as the thickness of the thin working layer decreases.

The examiner has not explained how the total thickness of Arai (copper lead thickness (whether substituted or not) + electrode thickness) falls within the claimed range of 2 to 10 microns. Hence, the examiner's assertion that the modified sensor of Arai in view of Kawaguri and McAleer would be structurally identical is not supported by the facts before us, nor by any explanation provided by the examiner. Therefore, the examiner's theory of inherency based upon structural identicalness fails.

Furthermore, the examiner has not explained how any of the other applied references of record cure the aforementioned deficiencies of Arai.

Therefore, in view of the above, we reverse each of the 35 U.S.C. § 103 rejections.

III. Conclusion

The rejection under 35 U.S.C. § 112, second paragraph is affirmed.

Each of the 35 U.S.C. § 103 rejections is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

TERRY J. OWENS Administrative Patent Judge	)
ROMULO H. DELMENDO Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
BEVERLY A. PAWLIKOWSKI Administrative Patent Judge	)

BAP/sld

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